Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Claim 1 (Previously Presented): A method for detecting DNA, comprising the steps of:

(a) immobilizing a probe DNA on a chip;

(b) placing a target DNA on the chip having the probe DNA immobilized thereon, to thereby hybridize the probe DNA and the target DNA to provide hybridized DNA;

(c) intercalating an intercalator to the hybridized DNA;

(d) introducing an electrochemiluminescent reaction fluid into the chip having the hybridized DNA with an intercalated intercalator;

(e) applying a preset voltage to the chip thereby causing reaction between the intercalator and the electrochemiluminescent reaction fluid; and,

(f) detecting, and analyzing a light from the reaction.

Claim 2 (Previously Presented): A method as claimed in claim 1, wherein the step (a) further includes the steps of;

washing an electrode formed on the chip for a first time,

dipping the electrode in a mixed solution containing the probe DNA, and

washing the electrode for a second time thereby immobilizing the probe DNA on the electrode.

Claim 3 (Original): A method as claimed in claim 2, wherein the first time washing includes the steps of dipping of the electrode in piranha solution and water in succession, the

mixed solution containing the probe DNA and ω-hydroxy-undecanethiol 3, or 3-mercaptopropionic acid are dissolved in an ethanol/octane mixed solvent, and the second time washing includes the steps of washing in ethanol and water.

Claim 4 (Previously Presented): A method as claimed in claim 2, wherein the electrode is formed of gold, the chip is formed of silicon, borosilicate glass, or PCB (Printed Circuit Board), and the probe DNA has a thiol functional group at a 5'-phosphate position.

Claim 5 (Original): A method as claimed in claim 1, wherein the intercalator is one selected from daunorubicin, nogalamycin, doxorubicin, and DAPI(4',6-diamidino-2-phenylindole), or, one selected from a material obtained by bonding proline, oxalic acid, or TPA (tripropylamine) with Hoechst 33258, quinacrine, or acridine orange.

Claim 6 (Previously Presented): A method as claimed in claim 1, wherein the electrochemiluminescent reaction fluid is one selected from Tris(2.2'-bipridiyl)ruthenium(II)[$Ru(bpy)_3^{2+}$], Tris(2.2'-bipridiyl)osmium(II)[$Os(bpy)_3^{2+}$] and Tris(1,10-phenanthroline) ruthenium(II)[$Ru(phen)_3^{2+}$].

Claim 7 (Previously Presented): A method as claimed in claim 1, wherein the step (b) further includes the steps of;

placing the target DNA on the chip having the probe DNA immobilized thereon;

applying a first voltage to the chip to thereby hybridize the probe DNA and the target DNA, and

applying a second voltage to the chip to thereby remove not hybridized DNAs.

Claim 8 (Previously Presented): A method as claimed in claim 1, wherein the step (c) further includes the steps of washing the intercalators not intercalated to the hybridized DNA with a buffer solution.

Claim 9 (Original): A method as claimed in claim 1, wherein the preset voltage in the step (e) is 0.5-1.20V.

Claims 10-20 (canceled)